

powered subwoofer



Mirage®

THE ORIGINAL BIPOLEAR LOUDSPEAKER™



o w n e r s m a n u a l



BPS-400

PRINTED IN CANADA
7AIMS400

IMPORTANT SAFETY INSTRUCTIONS

- **Read Instructions** - All safety and operating instructions should be read before the product is operated.
- **Retain Instructions** - The safety and operating instructions should be retained for future reference.
- **Heed Warnings** - All warnings on the product and in the operating instructions should be adhered to.
- **Follow Instructions** - All operating and use instructions should be followed.
- **Cleaning** - Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- **Attachments** - Do not use attachments not recommended by the product manufacturer as they may cause hazards.
- **Water and Moisture** - Do no use this product near water - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool.
- **Ventilation** - Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. They should also never be blocked by placing the product on a bed, sofa, rug, or other similar surface.
This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
- **Power Sources** - This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power; or other sources, please refer to the operating instructions.
- **Grounding or Polarization** - This product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.



- **Power Cord Protection** - Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.
- **Overloading** - Do not overload wall outlets or extension cords, as this can result in a risk of fire or electric shock.
- **Object and Liquid Entry** - Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
- **Servicing** - Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- **Heat** - The product should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
- **Non-use Periods** - The power cord of the product should be unplugged from the outlet when left unused for a long period of time.
- **Damage Requiring** - The product should be serviced by qualified service personnel when:
 - A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The product has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. Product has been dropped, or the enclosure damaged.

RADIO FREQUENCY EMISSIONS

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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INTRODUCTION

We are proud to welcome you as a new owner of a Mirage BPS-400. Mirage subwoofers are the result of extensive research into accurate bass reproduction and represent the leading edge in subwoofer design and performance. The finest components and cabinet materials combined with sophisticated manufacturing and quality control procedures ensure many years of exceptional performance and listening pleasure.

PLEASE TAKE TIME TO READ ALL OF THE INSTRUCTIONS CONTAINED IN THIS MANUAL TO MAKE CERTAIN YOUR SYSTEM IS PROPERLY INSTALLED AND FUNCTIONING CORRECTLY.

Be sure to unpack your subwoofer carefully. Retain the carton and all packing material for future use.

FEATURES AND OPERATING CONTROLS

All operating controls are conveniently located on the amplifier panel mounted on the rear of your subwoofer cabinet.

FEATURES

Auto-On/Auto-Off Circuit

Your subwoofer is equipped with a special "Auto-on/Auto-off" circuit. This circuit automatically turns your subwoofer on as soon as it senses a program signal. At a predetermined time after the program signal ends, this circuit automatically turns the subwoofer off.

Clipping Protection Circuit

Many powered subwoofers on the market today produce distorted sounds as a result of clipping at high input levels. Mirage's proprietary Clipping Protection Circuit (CPC) continuously senses the input signal level and automatically adjusts to prevent clipping of the wave form, maintaining undistorted bass reproduction.

Pulse Width Modulation

Your new BPS-400 incorporates a revolutionary new power amplifier technology called **Pulse Width Modulation (PWM)**.

The 400 watt **PWM** amplifier used in the BPS-400 has much higher efficiency (90%) than typical analog amplifiers (20%) and thus generates much less heat (typically 1/5).

The **PWM** amplifier can generate much higher power output than comparable analog amplifiers (400W vs 100-200W).

The 400 watt **PWM** amplifier is capable of generating very high sound pressure levels 125dB @ 18Hz.

Low-Level RCA Input Jacks

The RCA input jacks allow you to connect your subwoofer to any of the following:

- (a) Pre-amplifier outputs
- (b) Audio/Video processor outputs
- (c) The "subwoofer output" from an Audio/Video receiver
- (d) Any integrated receiver with pre-out facilities
- (e) The audio output from your stereo television or computer sound cards
- (f) An External Active Crossover.

See "Subwoofer Connection to your Audio/Video System".

OPERATING CONTROLS

Subwoofer Level Control

This rotary control adjusts the output level of your Mirage subwoofer and should be used to balance the level of the subwoofer with that on your main/satellite speakers. See "Set-up Calibration".

LP Filter (Low-pass) Control

This rotary control adjusts the high frequency roll-off of the subwoofer. Continuously variable from 50Hz to 100Hz, it is used to precisely match the subwoofer bass reproduction with that of your main/satellite speakers. See "Set-up Calibration".

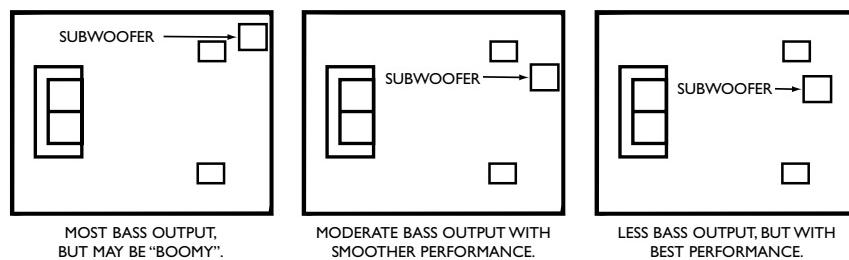
ROOM ACOUSTICS AND SUBWOOFER PLACEMENT

Mirage subwoofers can be placed virtually anywhere in your listening room without significantly affecting the stereo image of your main speakers. However, interactions between any subwoofer and room acoustic properties will have some impact on the overall bass performance. Reading this section will help you to find a placement for the subwoofer in your room which will yield the best bass performance.

CAUTION: MIRAGE SUBWOOFERS HAVE A BUILT-IN AMPLIFIER AND MUST HAVE ADEQUATE VENTILATION FOR COOLING PURPOSES. DO NOT PLACE THE SUBWOOFER NEAR HEAT SOURCES, OR ANYTHING WHICH MIGHT OBSTRUCT VENTILATION.

Although a clear path between the subwoofer and listening position is not required, it is important to leave approximately 4 inches of clearance between the subwoofer and walls or room furnishings. Generally, shorter runs of hook-up cables are preferable (and easier to hide), therefore locating your subwoofer relatively close to your audio equipment is often desirable.

The interaction between room acoustics and any subwoofer is closely related to the subwoofer's proximity to the walls. Typically, subwoofer placement directly in or close to a corner will produce the most bass output, placement along one wall but away from a corner will produce less bass output, and placement of the subwoofer further into the room will produce the least amount of bass output. It should also be realized that the corner location, although producing the most bass output often yields ill-defined or "boomy" bass. The latter two locations will deliver progressively more accurate bass performance.



We urge you to experiment with various subwoofer placements in your listening room to find the position which produces "deep and smooth" performance. Often, moving the subwoofer a foot or two can make a big sonic improvement. Remember to use familiar musical recordings with an abundance of low frequency information when you experiment with subwoofer locations.

CONNECTING YOUR SUBWOOFER

Using an Integrated Amplifier/Receiver equipped with pre-out Jacks only (See Diag. 1)

This method uses two standard RCA-to-RCA interconnect cables. First, connect the amp/receiver's left "PRE-OUT" to the subwoofer jack marked left (L) "LOW LEVEL INPUT". Then, connect the amp/receiver's right "PRE-OUT" to the subwoofer jack marked right (R) "INPUT". This method by-passes the subwoofer's built-in high pass crossover; and your speakers will continue to reproduce bass frequencies.

Using the "Subwoofer Output" of an A/V Receiver or Processor (See Diag. 2)

This method uses a single RCA-to-RCA interconnect cable to connect the "SUBWOOFER OUTPUT" jack from your A/V receiver or processor to either the left or right subwoofer "INPUT". This method does not remove low frequencies from your main speakers, and they will continue to reproduce bass frequencies.

Using External Crossover (See Diag. 3)

This method uses a single RCA-to-RCA interconnect cable to connect the "SUBWOOFER OUTPUT" jack from an external crossover to the LFX input of your subwoofer. This method by-passes the subwoofer's built-in low pass crossover and level control, thus, all subwoofer functions are controlled by the external crossover. (See External Crossover Owner's Manual)

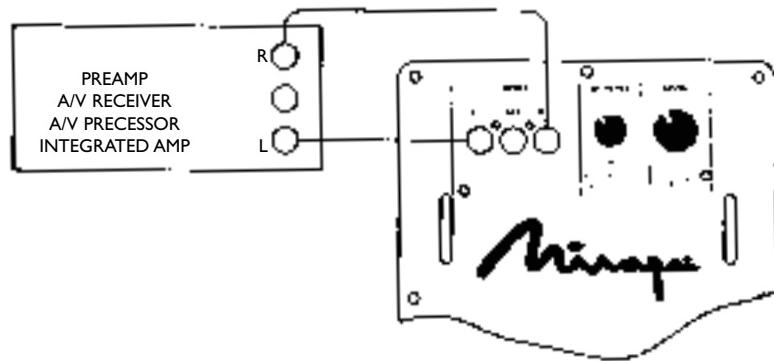
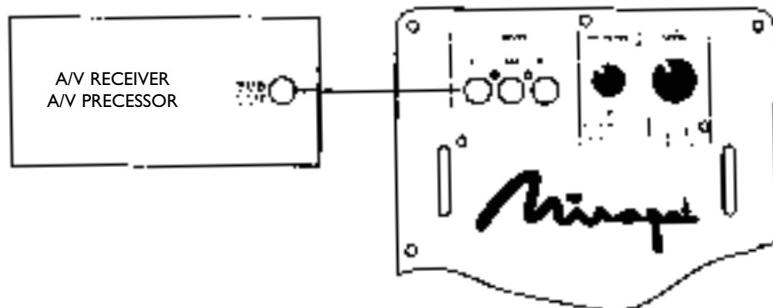
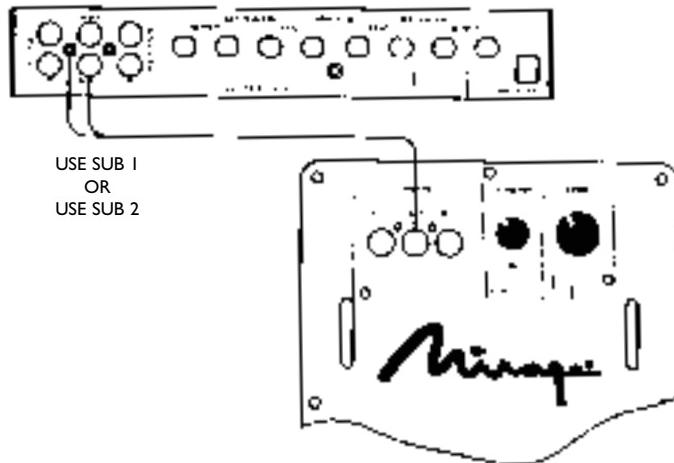
DIAGRAM I**DIAGRAM 2**

DIAGRAM 3

LFX-1 EXTERNAL CROSSOVER

**SET UP CALIBRATION**

For best results when setting up your system, assume your normal listening position and have another person perform the following adjustments:

1. Set the **Subwoofer Level** to its zero position. Set the **Subwoofer Roll-off Frequency Control** to 50Hz. Set any loudness, bass/treble, and/or equalizer controls on your preamplifier or integrated amp/receiver to their normal or mid-point positions.
2. Play a familiar CD, record, or video soundtrack that has substantial bass content.
3. Gradually turn the **Subwoofer Level** control clockwise until you achieve a neutral balance between the subwoofer's deep bass output and your main/satellite speakers.
4. Slowly turn the **Subwoofer Roll-off Frequency Control** clockwise to reach the best mid bass blend with your main/satellite speakers. This will be the point at which the bass retains solid impact and fullness. If the mid bass becomes "boomy" or ill defined, you have gone too far and you should turn the control counter-clockwise to the best balance point. If the sound is too thin (i.e., male vocals are not full sounding) then turn the control clockwise to the best balance point.

NOTE: The **Subwoofer Level Control** is designed to control the balance between your subwoofer and main/satellite speakers and should not be used as a substitute for the bass or loudness controls on your amplifier or receiver. Adjust the subwoofer's level for smoothest low frequency performance. If more bass is desired, advance the bass and/or loudness controls on your main amplifier or receiver.

SPECIFICATIONS

POWER OUTPUT:	400 WATTS
WOOFER:	2 x 12" (30.5cm) BIPOLE
SOUND PRESSURE OUTPUT:	125 dB in typical room
ACOUSTIC FREQUENCY RESPONSE:	18Hz, 50 - 100, +0-3dB
LOW PASS FILTER:	50 - 100 Hz @ 24dB/Octave
INPUT SENSITIVITY:	L & R 50 mV LFX 150 mV
DIMENSIONS: H x W x D (in) (cm)	21.5 x 23.5 x 19.5 54.6 x 59.7 x 49.5
WEIGHT:	110 lb. 50 kg.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

LIMITED WARRANTY POLICY

Warranty in the United States and Canada

Mirage warrants this product to the retail purchaser against any failure resulting from original manufacturing defects in workmanship or materials. The warranty is in effect for a period of one (1) year from date of purchase from an authorized Mirage dealer and is valid only if the original dated bill of sale is presented when service is required.

The warranty does not cover damage caused during shipment, by accident, misuse, abuse, neglect, unauthorized product modification, failure to follow the instructions outlined in the owner's manual, failure to perform routine maintenance, damage resulting from unauthorized repairs or claims based upon misrepresentations of the warranty by the seller.

Warranty Service:

If you require service for your Mirage loudspeaker(s) at any time during the one (1) year warranty period, please contact: 1) the dealer from whom you purchased the product(s), 2) Mirage National Service, 203 Eggert Road, Buffalo, N.Y. 14215
Tel: 1-716-896-9801 or 3) Mirage Loudspeakers, a division of Audio Products International Corp., 3641 McNicoll Avenue, Scarborough, Ontario, Canada, M1X 1G5,
Tel: 1-416-321-1800. You will be responsible for transporting the speakers in adequate packaging to protect them from damage in transit and for the shipping costs to an authorized Mirage service center or to Mirage Loudspeakers. If the product is returned for repair to Mirage Loudspeakers in Scarborough or Buffalo, the costs of the return shipment to you will be paid by Mirage, provided the repairs concerned fall within the Limited Warranty. Mirage Warranty is limited to repair or replacement of Mirage products. It does not cover any incidental or consequential damage of any kind. If the provisions in any advertisement, packing cartons or literature differ from those specified in this warranty, the terms of the Limited Warranty prevail.

Warranty Outside of The United States and CANADA:

Product warranties may be legislated differently from one country to another. Ask your local dealer for details of the LIMITED WARRANTY applicable in your country.

IMPORTANT: Please retain the carton and packing material for this Mirage product to protect it in the event it ever has to be shipped to a service center for repair.
Product received damaged by a service center that has been shipped by the end user in other than the original packaging, will be repaired, refurbished and properly packaged for return shipment at the end user's expense.
